

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
19 February 2004 (19.02.2004)

PCT

(10) International Publication Number  
**WO 2004/015806 A2**

- (51) International Patent Classification<sup>7</sup>: **H01M 8/16** (74) Agent: GUERRE, Fabien; c/o BREVATOME, 3, rue du Docteur Lancereaux, F-75008 Paris (FR).
- (21) International Application Number: PCT/IB2003/003637 (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (22) International Filing Date: 5 August 2003 (05.08.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
02 10009 6 August 2002 (06.08.2002) FR
- (71) Applicants (*for all designated States except US*): CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE [FR/FR]; 3 rue Michel Ange, F-75794 Paris Cedex 16 (FR). COMMISSARIAT A L'ENERGIE ATOMIQUE [FR/FR]; 31/33, rue de la Fédération, F-75752 Paris 15ème (FR).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): BERGEL, Alain [FR/FR]; 42 rue Pigni, F-31500 Toulouse (FR). FERON, Damien [FR/FR]; 45 avenue Jean Moulin, F-92260 Fontenay Aux Roses (FR).
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FUEL CELL USING BIOFILMS AS CATALYST FOR THE CATHODE REACTION AND/OR THE ANODE REACTION

(57) Abstract: The present invention relates to a process for the treatment of at least one of the electrodes (cathode and/or anode) of a fuel cell, before the said cell is operated, and before or after the said electrode is placed in the said cell, comprising the step consisting in forming a biofilm on at least part of the surface of the said electrode, by immersing the said electrode in a medium capable of causing the growth of biofilms, the said biofilm being intended to catalyse the reaction at the electrode, and the step consisting simultaneously in subjecting the said electrode to a polarization potential. The invention also relates to a fuel cell comprising at least one electrode covered with a biofilm, obtained before the said electrode is placed in the cell, and to the electrode.

WO 2004/015806 A2